CLAIMS

1. A system for treating a vascular condition, comprising:

a catheter;

a stent coupled to the catheter, the stent including a stent framework;

a polymeric coating disposed on the stent framework, wherein the polymeric coating comprises a blended matrix of a polysulfone and a styrenic block copolymer; and

a therapeutic agent in contact with the blended matrix.

2. The system of claim 1 wherein the catheter includes a balloon used to expand the stent.

3. The system of claim 1 wherein the catheter includes a sheath that retracts to allow expansion of the stent.

4. The system of claim 1 wherein the stent framework comprises one of a metallic base or a polymeric base.

5. The system of claim 4 wherein the metallic base is selected from the group consisting of stainless steel, nitinol, tantalum, MP35N alloy, platinum, titanium, a suitable biocompatible alloy, a suitable biocompatible material, and a combination thereof.

6. The system of claim 1 wherein the therapeutic agent is dispersed within the blended matrix of the polysulfone and the styrenic block copolymer.

7. The system of claim 1 wherein the polysulfone has a molecular weight between 10,000 Daltons and 100,000 Daltons.

8. The system of claim 1 wherein the styrenic block copolymer has a molecular weight between 200 Daltons and 200,000 Daltons

9. The system of claim 1 wherein the polymeric coating comprises between 0.0 percent and 50 percent of the therapeutic agent by weight.

10. The system of claim 1 wherein the polymeric coating has a thickness between 0.5 microns and 20 microns.

11. The system of claim 1 wherein the polymeric coating has a weight between 50 micrograms and 1500 micrograms.

12. The system of claim 1 wherein the therapeutic agent is positioned between the polymeric coating and the stent framework.

13. The system of claim 12 wherein the therapeutic agent positioned between the polymeric coating and the stent framework has a thickness between 0.1 microns and 20 microns.

14. The system of claim 1 wherein the blended matrix of the polysulfone and the styrenic block copolymer provides a controlled elution rate for the therapeutic agent.

15. The system of claim 1 wherein the therapeutic agent is selected from the group consisting of an antirestenotic drug, an antisense agent, an antineoplastic agent, an antiproliferative agent, an antithrombogenic agent, an anticoagulant, an antiplatelet agent, an antibiotic, an anti-inflammatory agent, a steroid, a gene therapy agent, a therapeutic substance, an organic drug, a pharmaceutical compound, a recombinant DNA product, a recombinant RNA product, a collagen, a collagenic derivative, a protein, a protein analog, a saccharide, a saccharide derivative, a bioactive agent, a pharmaceutical drug, and a combination thereof.

16. The system of claim 1 wherein the polymeric coating comprises a plurality of therapeutic agents, each therapeutic agent having a predetermined elution rate, the blended matrix of the polysulfone and the styrenic block copolymer eluting the therapeutic agents at the predetermined elution rates.

17. The system of claim 16 wherein a first therapeutic agent is concentrated adjacent to the stent framework, and a second therapeutic agent is concentrated adjacent to the outer surface of the polymeric coating.

18. The system of claim 17 wherein the first therapeutic agent comprises an antirestenotic drug and the second therapeutic agent comprises an anti-inflammatory drug.

19. The system of claim 1 further comprising:

a primer coating disposed on the stent framework between the stent framework and the polymeric coating.

20. The system of claim 19 wherein the primer coating is selected from the group consisting of parylene, polyurethane, phenoxy, epoxy, polyimide, polysulfone, pellathane, and a suitable polymeric primer material.

21. A method of manufacturing a drug-polymer coated stent, comprising:

forming a polymeric solution including a styrenic block copolymer and a styrenic block copolymer solvent;

adding a polysulfone to the polymeric solution to form a blended matrix of the polysulfone and the styrenic block copolymer;

applying the polymeric solution onto a stent framework; and

drying the polymeric solution.

22. The method of claim 21 wherein the styrenic block copolymer solvent is selected from the group consisting of chloroform, methyl ethyl ketone, tetrahydrofuran, methyl chloride, toluene, ethyl acetate, dioxane, and a suitable organic solvent.

23. The method of claim 21 wherein the polymeric solution is applied using an application technique selected from the group consisting of dipping, spraying, painting, and brushing.

24. The method of claim 21 wherein the polymeric solution is dried in a vacuum environment.

25. The method of claim 21 wherein the polymeric solution is dried at a temperature between 25 degrees centigrade and 45 degrees centigrade.

26. The method of claim 21 further comprising:

mixing at least one therapeutic agent with the polymeric solution prior to applying the polymeric solution onto the stent framework.

27. The method of claim 21 further comprising:

applying a therapeutic agent to the stent framework prior to applying the polymeric solution onto the stent framework.

28. The method of claim 21 further comprising:

applying a primer coating onto the stent framework prior to applying the polymeric solution onto the stent framework.

29. A drug-polymer coated stent, comprising:

a stent framework; and

a polymeric coating disposed on the stent framework, wherein the polymeric coating comprises a blended matrix of a polysulfone and a styrenic block copolymer; and

a therapeutic agent contacting the polymeric coating.

30. The stent of claim 29 wherein the stent framework comprises one of a metallic base or a polymeric base.

31. The stent of claim 29 wherein the blended matrix comprises a chain length of the polysulfone and a chain length of the styrenic block copolymer based on a predetermined elution rate of the therapeutic agent.

32. The stent of claim 29 wherein the blended matrix comprises a first fraction of the polysulfone and a second fraction of the styrenic block copolymer based on a predetermined elution rate of the therapeutic agent.

33. The stent of claim 29 wherein the therapeutic agent is selected from the group consisting of an antirestenotic agent, an antisense agent, an antineoplastic agent, an antiproliferative agent, an antithrombogenic agent, an anticoagulant, an antiplatelet agent, an antibiotic, an anti-inflammatory agent, a steroid, a gene therapy agent, a therapeutic substance, an organic drug, a pharmaceutical compound, a recombinant DNA product, a recombinant RNA product, a collagen, a collagenic derivative, a protein, a protein analog, a saccharide, and a saccharide derivative.

34. The stent of claim 29 wherein the therapeutic agent is dispersed within the blended matrix of the polysulfone and the styrenic block copolymer.

35. The stent of claim 29 wherein the therapeutic agent is positioned between the polymeric coating and the stent framework.

36. The stent of claim 29 further comprising:

a primer coating disposed on the stent framework between the stent framework and the polymeric coating.

37. The stent of claim 29 wherein the primer coating is selected from the group consisting of parylene, polyurethane, phenoxy, epoxy, polyimide, polysulfone, pellathane, and a suitable polymeric primer material.

38. A method of treating a vascular condition, comprising:

inserting a drug-polymer coated stent within a vessel of a body, the drug-polymer coated stent including a blended matrix of a polysulfone and a styrenic block copolymer and at least one therapeutic agent in contact with the blended matrix; and

eluting the at least one therapeutic agent from the drug-polymer coated stent into the body.

39. The method of claim 38 wherein the blended matrix of the polysulfone and the styrenic block copolymer controls an elution rate of each therapeutic agent.

40. The method of claim 38 further comprising:

selecting the blended matrix of the polysulfone and the styrenic block copolymer based on a predetermined elution rate of each therapeutic agent.